

Can Canadians Trust Their Food Supply?

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Summary

Safe food - Canada is ranked 5th in the world for its food safety systems. Strong legislation, food product innovation and food safety programs from farm to fork are continuously evolving to provide safe food to consumers. Even so, food borne illnesses and food scares still occur. Why does this happen and how do the players in the food chain manage the risks that could lead to food borne illness?

Is food safer today that it was 100 or even 50 years ago? Humans are always exposed to the potential of illness from eating tainted vegetables, fruits, and meat and dairy products. One would think that the evolution of food legislation and technological advances in food production, processing, sanitation, transportation and storage would ensure consumers eat safe food all the time. Yet, food product recalls and documented cases of widespread food and water borne illnesses and even deaths are still happening. What is the safety risks associated with food consumption? How can consumers, industry and governments manage these risks?

A number of economic, societal and scientific factors account for the continued presence of food borne illness in today's society. These include changing agricultural practices, new methods of food processing, the globalization of food manufacture and distribution, changing consumer behaviour and consumer susceptibility to disease, and increased surveillance and improved detection methods for the causative agents.^{1,4,13,22}

Pathogenic microorganisms cause the majority of food borne illnesses. According to the Public Health Agency of Canada (PHAC), gastrointestinal diseases caused by pathogenic bacteria such as Salmonella, E. coli, Campylobacter, Yersinia, Listeria, Shigella, and parasites and viruses are a major health concern in Canada. These organisms can be traced back to food, water, animals or an infected person. Current estimates suggest there are approximately 1.3 cases of enteric disease per person per year costing the Canadian health system about \$50 million annually.²¹



Canada's food safety system is one of the best in the world. Government and industry are working together to improve current systems.

Even then, many infections remaining undiagnosed and/or unreported.

Other agents may also affect food safety. These include veterinary drug and pesticide residues, food additives, environmental toxins, persistent organic pollutants, allergens and unconventional agents such as prions associated with bovine spongiform encephalopathy (BSE) in cattle. New and emerging agents in food and water are being discovered as new illnesses arise and detection methodologies become more sophisticated and sensitive.

While microbiological food safety issues are the main focus of food companies, chemical contamination of the food supply is also gaining attention. Recent examples are the contamination of pet food with the chemical melamine, methylmercury in fish, acrylamide in fried foods, and bisphenol A in plastic containers.

Food for human consumption is not the only sector implicated in food safety risks. In 1999, more than 35 human cases of Salmonella poisoning occurring in Canada were linked to contact with processed pig ears produced as dog treats. Some of these illnesses required children to be hospitalized.⁹ In 2005, Canada and the United States reported additional Salmonella

infections associated with animal-derived pet treats.⁷ Food scares can also have devastating impacts on food production systems. For example, the discovery of a single reported case of BSE in Canada in May 2003 led to an immediate ban on all exports of Canadian beef and resulted in exports falling to zero in the following three months. Avian influenza (subtype H7N3) outbreaks at poultry farms in British Columbia, Prince Edward Island and Saskatchewan resulted in the culling of millions of birds.

Despite the alarming publicity surrounding unsafe food, Canada does have one of the strongest food safety systems in the world and is a recognized leader in implementing creative systems to meet new food safety challenges.¹⁵

Canada's Legislative Framework

Canada's food safety system is based upon science-based regulations developed in consultation with provincial jurisdictions, industry, academia, consumers and other stakeholders.¹⁵ New legislation also involves consultations with food regulatory agencies around the world (i.e. the Food Safety Australia New Zealand (FSANZ) and the U.S. Food and Drug Administration (FDA) and Department of Agriculture (USDA)). Regulations are developed in line with requirements of the World Trade Organization and the international food standards body, Codex Alimentarius.

In Canada, the main federal legislation covering food safety is the Food and Drugs Act (FDA). This Act prohibits the manufacture or sale of all dangerous or adulterated food products anywhere in Canada. The Act is supplemented by a number of Regulations to ensure the safety and nutritional quality of foods.

Other federal trade and commerce legislation contributing to the regulatory framework include the Consumer Packaging and Labelling Act, Canada Agricultural Products Act, Meat Inspection Act, Fish Inspection Act, Seeds Act, Fertilizer Act, Feeds Act, Pest Control Products Act and the Health of Animals Act.

Health Canada and the Canadian Food Inspection Agency have the primary responsibility for the administration and enforcement of the FDA legislation. The Public Health Agency of Canada and Agriculture and Agri-Food Canada play supporting roles.

Provinces and territories in Canada also have legisla-

tion governing food produced and sold within their own jurisdictions. These laws complement federal statutes. Individual provinces are also responsible for animal husbandry and agricultural practices, the licensing of meat and dairy establishments selling food products intraprovincially, and inspection programs covering food processing and food service establishments, food retailers, hospitals, nursing homes, community kitchens, and food banks. Municipal legislation can also add to the regulation.

Currently the Government of Canada is undergoing public consultation on its proposed "Food and Consumer Safety Action Plan", a plan to ensure consumer, food and health products are safe and reliable.¹⁴ This plan focuses on building safety systems to prevent health risks; implementing higher penalties to deter irresponsible actions of companies; updating legislation to more quickly remove unsafe food, health and consumer products from the market; building effective tools to better communicate with consumers and strengthening ties with trading partners.

Canada and Global Agriculture Trade

Increased global food trade creates new risks for Canadian consumers. Canada is a significant player in the global trade of agricultural and agri-food products. In 2006, Canada was the fourth largest exporter and the fifth largest importer of agriculture and agri-food products in the world, accounting for 3.5% of world exports and 2.6% of world imports. As an importer Canada follows the European Union (EU-27) at 12.2%, United States 9.7%, Japan 5.9%, and China 4.1%.²

The largest share of Canadian food imports in 2006 came from the United States (58%) followed by the European Union (13.6%), Mexico (3.9%), Brazil (2.8%), Australia (2.1%) and China (1.9%). Imports from the United States and Mexico have doubled since 1990 and tripled for the rest of the world demonstrating the increasing reliance on imported food products.

While 19% of farm products are exported, the Canadian food and beverage industry is the largest buyer of domestic agricultural production using approximately 44% of the domestic supply. Canada exports finished food products to over 180 countries, with 83% of this total primarily going to four markets (United States (70%), Japan (8%), China (3%) and Mexico (2%)).³

These changing patterns in food processing and distribution make it more difficult to trace the origin of disease outbreaks. Food production with national and/or global distribution networks results in illnesses spread over much wider geographic locations, making it more difficult to detect and discern the causative agent. For instance, in the U.S. during September and October 2007, about 200 people scattered over 26 states became ill after eating spinach contaminated with the O157:H7 strain of *Escherichia coli*.

The Food Chain

Understanding how food safety systems work requires an understanding of the global human food chain. In Canada the food chain is multifaceted. It consists of primary crop, animal and fish producers, input manufacturers and suppliers, food processors, packaging suppliers, distributors, retailers and finally consumers. While each player in the chain is ultimately responsible for food safety, they are also heavily dependent on the players before and after them, requiring extensive cooperation at all levels to ensure product safety.

There are three groups in the food continuum responsible for food safety. Firstly, producers, manufacturers, suppliers and distributors have the responsibility for the safety of their products. Secondly, government has the responsibility of identifying health risks associated with the food supply, assessing the severity and probability of harm or damage and developing national strategies to ensure high safety standards. Thirdly, consumers need to educate and inform themselves about health risks and benefits associated with food consumption.¹⁵

Canadian Perceptions of Food Safety

A country's food safety system is a reflection of its culture and economic status. Consumers in different countries have their own unique set of health concerns and priorities.²⁰

How do Canadian consumers feel about the safety of their food supply?

A benchmark study conducted in 2004¹⁸ and subsequent follow-up study in 2006¹⁹ examined Canadian consumer perceptions of food quality and safety. Overall, Canadians continue to be quite confident in the quality and safety of Canadian food products. Some key findings included the following:

- ▶ Food quality means freshness, nutrition and food safety
 - ▶ Canada has better production practices and standards and more rules and regulations than other countries
 - ▶ Canadians are extremely confident in the safety of our food supply with 40% being completely confident and >50% somewhat confident
 - ▶ 37% of Canadians believe that food safety problems are likely to originate during food processing.
 - ▶ Only 14% of Canadians believe food safety problems originate at the farm level.
 - ▶ When making food purchase decisions, the majority of Canadian consumers pay more attention to the food processor, grocery store and restaurant than they do to the farm gate.
 - ▶ Canadians associate food safety threats with specific concerns. Managing animal diseases is the most important concern followed by hormones, antibiotics and chemicals in animals and plants.
- Me ▶ a continues to be the primary source of food safety information for Canadians but Canadians feel the government should provide more information.
- Me ▶ : Canadians are not aware of food safety initiatives and have a low awareness of food traceability systems.

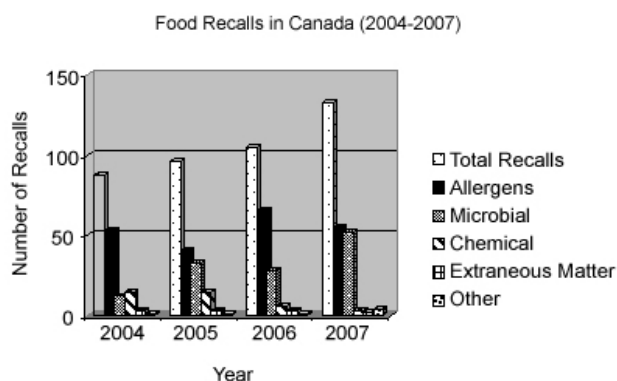
Impact of Food Recalls on the Canadian Consumer

The food recall process in Canada is one step in the food safety system. Health Canada and the Canadian Food Inspection Agency work with the food industry to track and advise Canadian consumers of food recalls related to the presence of potential allergens, dangerous microorganisms, chemicals and other food safety risks such as foreign objects or package tampering.

Canadians are most concerned about managing animal diseases and hormones, as well as decreasing chemical and pesticide levels in foods. However, most food product recalls in Canada over the last four years have been primarily due to the presence of undeclared allergens or microbiological hazards (Figure 1). Illnesses due to pathogenic microorganisms pose a much greater threat than contracting an illness from an animal or from ingesting foods with chemical residues.

Effectively recalling products minimizes the risk to consumers, demonstrates that checks and balances in the food chain are working, and illustrates that companies or governments are prepared to act to protect consumers. While industry, governments and media may widely broadcast a food recall, better communication with consumers after a recall has taken place would continue to ensure consumer confidence in the food supply chain.

Figure 1: Food Recalls in Canada (2004-2007)⁵



Managing the risk

Increasing concern about food safety hazards, the rising incidence of illnesses and deaths related to new pathogenic microorganisms, and the inability of traditional inspection protocols to deal with these hazards, has fuelled the inclusion of risk management programs in producer and industry food safety systems.

Producers may be engaged in establishing on-farm food safety programs based upon risk analysis; manufacturers and distributors implement Good Manufacturing Practices (GMP) and Hazard Analysis and Critical Control Points (HACCP) processes to manage food safety risks; and consumers are responsible for safe food handling practices in their environments.

Government and industry, as a means to improve food safety practices at home and to reduce the number and financial burden of food borne illnesses, both support food safety education programs for consumers. The Canadian Partnership for Consumer Food Safety Education complements the food safety initiatives taking place on the farm, in the plant and in retail and food service establishments.

The Public Health Agency of Canada has initiated an active food- and water-borne illness surveillance system (C-EnterNet) across Canada to better quantify the level of gastrointestinal disease in the Canadian population and determine the impact on the Canadian economy. The C-EnterNet program will also measure the effectiveness of food and water safety programs implemented across Canada.

The BSE incident in the United Kingdom put increased pressure on all players in the global food chain to ensure food safety to consumers. In Canada, two programs were the result of the BSE and other animal related food scares. These were the establishment of documented on-farm food safety programs and national traceability initiatives. In addition, the concept of biosecurity or "actions taken to protect crops and animal commodities from exposures to accidental or intentional contaminations"¹¹ on farm premises has been expanded to include bioterrorism along the food chain as well.

On-Farm Food Safety Programs

Animal and crop producers have always produced food in a safe, high quality manner. The implementation of HACCP protocols now allows the producer to prove new and existing food safety practices function well.

National producer groups are in the process of developing strategies and implementation materials for producers to follow. There are currently twenty-nine commodity specific, on-farm programs in the development or implementation stage, covering over 99% of primary production in Canada.^{12,23} Government approved recognition processes are also under development. This opens up opportunities for producers and industry to successfully meet new market expectations.

Traceability

The Codex Alimentarius defines traceability as the "ability to trace the history, application or location of an entity by means of recorded identifications."¹⁰ Traceability is closely linked to product identity, but also relates to the origin of materials and parts, processing and production history, and the distribution and location of the product after delivery.

Traceability does not ensure food safety but it does provide support for food safety systems. It is a risk

management tool allowing producers or manufacturers to efficiently track raw materials or finished product throughout the food chain.

A traceability system means producers and industry can locate and remove unsafe products in event of a product recall, minimize the size of a recall thus reducing costs, identify the source of possible contamination, determine third party liability (if applicable) and protect brand reputation.

The ability to track animals from the farm to the consumer's fork took on a new urgency in the food industry due to incidence of BSE in Europe, Canada, the United States and Japan. Canada became the first country in the world to make identification tags mandatory for cattle, as part of a food safety tracking system¹⁷. This traceability was a key factor in opening up the U.S. and Mexico markets for selected beef cuts.¹⁶ Traceability enables producers and regulators the ability to respond quickly to outbreaks of animal disease and retain public confidence in the safety of the food system.

Can-Trace is Canada's voluntary national food traceability standards initiative. It is industry-led and is tasked with defining and developing minimum requirements for tracking and tracing standards for all food products sold in Canada.⁶

Conclusions

Globalization makes it more difficult for regulatory agencies in any one country to use traditional techniques of on-hand inspection and testing to ensure food is safe to consume. Food safety issues can easily cross borders and no country is immune from the impact of a food safety incident.

Canada's food safety system is one of the best in the world⁸, but there is always room for improvement. Implementing HACCP systems and biosecurity systems, disease monitoring, reporting feedstuff safety, safe use of agricultural and veterinary chemicals, as well as controlling potential food-borne pathogens and traceability are all ways to ensure the safety and integrity of the food we grow, produce and consume. It is imperative the agriculture industry works collaboratively with government to provide food safety systems based on sound risk management principles throughout the food chain and communicate effectively with the public.

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